

GEOPHYSICAL MAGNETIC AND ELECTROMAGNETIC SURVEYS

BILL - PELLY MINERAL CLAIM GROUP

PELLY LAKES AREA
Watson Lake Mining Division
Yukon Territory

Long. 130 deg. 10' West
Lat. 62 deg. 04' North

by

John S. Brock
Atlas Explorations Limited

June 13 - August 29, 1967

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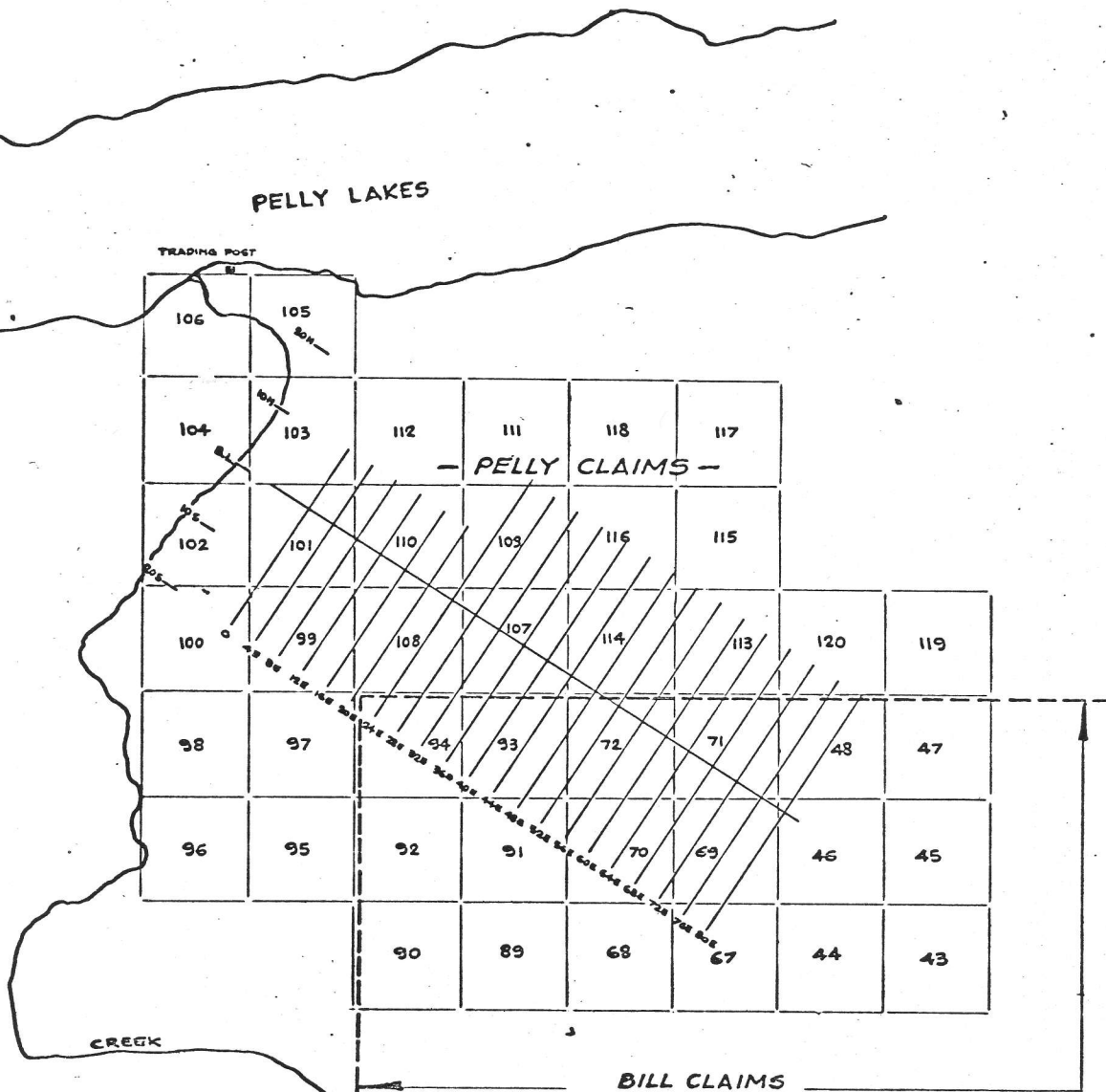
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TRAFFIC MOUNTAIN
REGION

KEY MAP OF BILL CLAIMS + GRID

SCALE 1" = 1/2 MILE



ATLAS EXPLORATIONS LIMITED

ROSS RIVER (Y.T.)

LIST OF CLAIMS

<u>CLAIM NUMBER</u>	<u>GRANT NUMBER</u>	<u>DATE RECORDED</u>
Bill 45 - 48	Y 16676 - Y 16680	October 17, 1966
Bill 69 - 72	Y 16701 - Y 16704	October 17, 1966
Bill 91 - 94	Y 16723 - Y 16726	October 17, 1966
Pelly 95 - 120	Y 17990 - Y 19015	August 11, 1967

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(N. P. L.)

330 MARINE BUILDING
355 BURRARD STREET
VANCOUVER 1, B. C.

INTRODUCTION

The Bill Group was staked in early October, 1966, to cover an area of high copper, lead, and zinc geochemical results discovered as a result of reconnaissance soil sampling in a region of favourable geology. The northwestern corner of the Bill group was covered by a detailed geochemical survey, was mapped, and geochemical surveys were conducted over geochemical anomalies. The Pelly 95-120 claims were staked to cover extensions of geochemical anomalies north of the margin of the Bill group.

LOCATION AND ACCESS

The Bill-Pelly group is located at and to the southeast of an abandoned trading post on the south side of Pelly Lakes, about 75 air-line miles east of Ross River.

The group may be reached by float aircraft, landing on Pelly Lakes, or by tote trail. The Atlas Tote Trail leaves the Watson Lake - Ross River Road northwest of Finlayson Lake and reaches the claim group at about Mile 43. The road is accessible by bombardier in the summer or by 4-wheel drive truck in the winter.

REGIONAL GEOLOGIC SETTING

The Bill-Pelly group is underlain by a steeply-dipping, N. 70 deg. W. striking sequence of interbedded black cherts, black slates, dolomites, and quartzites, (of probable Devonian age). The sequence lies with apparent conformity on a thick unit of gray phyllite of probable Proterozoic age. The Devonian (?) sequence occurs along the eastern limb of a tight, gently westerly-plunging anticline cored by the Proterozoic (?) phyllites. The east margin of the group is underlain by granodiorite which intrudes the Devonian (?) meta-sediments.

At least two strong directions of regional fracturing occur. A N. 70 deg. W. striking set of either reverse or normal faults has caused dip-slip displacements between large blocks. A northeasterly trending set parallels the Pelly Lakes lineament and has caused apparent strike-slip movements.

TOPOGRAPHY AND GROUND CONDITIONS

The Bill-Pelly group lies generally in an area of rugged mountain topography within which outcrop is abundant. The area surveyed geochemically, however, is at the base of a mountain ridge where a gradually-sloping valley re-entrant occurs. The valley is covered by alluvium and glacial moraine. Elevations average 3,500 feet and vegetation is typical Yukon sub-alpine. Soils sampled were generally of the B horizon but in places where A horizon material was thick, it was collected.

METHOD OF SURVEY

Instruments Used

For the magnetometer survey, a Jalander 46 - 65 magnetometer was used, the instrument is hand-held and measures the vertical magnetic component by use of an oil-dampened fluxgate which automatically levels itself in the direction of the vertical field. The range of this instrument is 10 to 250,000 grams over five sensitivity ranges, the lowest being 10 gammas per scale division. The magnetometer is of light weight and readings can be obtained quickly, a conversion factor is necessary before gamma values can be determined.

The electromagnetic survey was carried out with a Crone JEM dual frequency unit. The Crone is of the inductive type and may be either used as a horizontal or vertical loop apparatus. Measurements are made of the resultant dip angle of the field and the width of null or out of phase component. It is designed to be operated with a maximum coil spread of 300 feet for a horizontal conductor with maximum coil spread (no skin effect allowance) and 100 feet for vertical conductor. The effective lateral coverage is a direct function of the spread under ideal conditions. The equipment was chosen in order to give reliable information on the attitude and configuration of a conductor, the physical properties of the host rock, dimensions of the conductor and results free from error due to topographic relief.

Survey Method, Linecutting

All grids designed for ground geophysical and geochemical surveys were laid out using four hundred foot line spacing with one hundred foot station

intervals. Central base lines were used for survey control, all cross lines were surveyed by picket and chain methods. Linecutters were hired from the native settlement of Ross River; survey control was checked by the party chief.

Magnetometer Survey

Prior to the actual magnetometer survey, readings were taken along the central base line at cross line intersection points. These stations were looped and re-read every hour as a means of controlling drift and diurnal variations. With base stations of an established value serving as a means of controlling drift and diurnal variations, a rapid and precise check was kept on magnetic variations and the entire survey was thus kept on a relative basis during day to day operation. Each cross line was read with re-checks at the base station within every hour, this method provided an internal control for detecting diurnal and drift variations. The survey was done by one operator using the same instrument.

Electromagnetic Survey

All surveys were run with horizontal loop configuration and 300 foot coil spacing in order that highest response could be obtained from flat lying sulphide bodies. Both 1800 and 480 cps readings were taken at each station. The coil configuration was not adaptable to conditions of conductive overburden and maximum response from e such was expected. All traverses were made by the "in line method" and done over the same grid as used for the magnetometer surveys. Spacing was reduced to 300 feet over areas of interest. The two man EX crew did all their ground work in coincidence with the magnetometer and soil sampling crew.

Treatment of Data

Magnetic Results

Magnetic results were corrected for diurnal and drift each night by the field operator. / The final gamma values were then plotted on a grid plan using scale of 400 feet to 1 inch. This data was presented to the party chief who profiled and contoured the data on overlay material in order that he could remain familiar with day to day results and progress of the survey, direct its course and have results available for comparison with electromagnetic and geological-geochemical data. Field plots of this information were forwarded to the base office at Ross River at the end of the survey for final plotting and examination on a scale of 1 inch to 400 feet. Magnetic data is presented in this report on such maps showing gamma values and contoured results. (See Appendix). All maps show major topographic features and locations of mineral claim posts.

Electromagnetic Results

All results as derived in the field were plotted each night by the EM operators on a grid plan using a scale of 1 inch to 400 feet. High and low frequency results were presented to the party chief for inspection and profiling in order that this data be compared with the other surveys and the course of the electromagnetic survey be directed on a daily basis.

GEOPHYSICAL RESULTS

Electromagnetic Survey

A pronounced northwesterly trending conductor was located between line 64E and 48E from stations 4S to 12S. Resultant dip angles were negative on both high and low frequency responses. The attitude of the conductor indicates structure dips to the southwest. From data obtained through geologic mapping (see Geologic Report, Bill Group by C. L. Smith) it is assumed that this conductor is representative of Unit 4, black chert and black phyllite. Termination of the conductor at its northwest end is probably due to faulting as shown on the geologic map.

A high intensity positive response on line 68E, 4S occurs within the vicinity of known sulphide mineralization, although slightly to the southwest. It is possible that this single line anomaly could be indicative of a narrow vertical conductor and massive sulphides.

A Broad, irregular conductive zone as represented by negative resultant dip angles has been recorded between line 80E and 44E, north of the base line. No geologic information is available from this area. The response is thought to be due to carbonaceous units folded within the grey cherts and limestones.

At the west end of the grid and south of the base-line, a well defined anomaly is recorded between lines 0E and 20E. Dip angles on both frequencies are negative and the conductor is 'open' at its western end. No explanation of the anomaly is evident although it is similar in characteristics to responses obtained over the black cherts and phyllites at the eastern end of the survey grid.

Magnetometer Survey

A magnetic anomaly was delineated between line 80E and 60E from stations 4S to 16S. The anomaly strikes in a northwesterly direction and is partially coincident with a conductor outlined in the same area. Within the magnetic anomaly, minimum closure of 900 gammas, there are four isolated

single line highs of 300 to 600 gammas intensity, or maximum response of 1500 gammas total intensity.

No geologic explanation is apparent although it appears that the underlying rock units have an obvious higher magnetic background where in proximity to the intrusive granodiorite. Local concentrations of magnetic sulphide mineralization within this area probably explain the isolated highs. It is notable that these zones are probably not of economic significance due to absence of obvious geochemical coincidence.

CONCLUSIONS AND RECOMMENDATIONS

Geophysical surveys of the magnetic and electromagnetic type have not aided in the delineation of known sulphide mineral occurrences. In general, the electromagnetic responses can be explained geologically, however, the cause of magnetic anomalies is not apparent.

It is recommended that no further geophysical surveys be carried out on the Bill Group until an explanation of magnetic responses can be obtained through either trenching or light diamond drilling.

Respectfully submitted,



John S. Brock,
Atlas Explorations Limited

BILL GROUPSUMMARY OF COSTS, GEOPHYSICAL SURVEYSA. MAGNETOMETER SURVEY

1.	(a)	<u>Footage Read:</u> 89,000 feet = 16.9 miles	
	(b)	<u>Operator:</u> J. Galeski	
2.	(a)	<u>Wages:</u> 6 man days x \$16.50, daily wage of J. Galeski	\$ 99.00
	(b)	<u>Helicopter Support:</u> .6 hours at \$112.00/hour	67.20
	(c)	<u>Fixed Wing Support:</u> 1 trip, one way, Ross River to Pelly Camp = 1 (76 miles x \$.85/mi. = 1 x \$64.60)	64.60
	(d)	<u>Subsistence Cost:</u> 6 man days x \$8.00, daily cost	48.00
	(e)	<u>Instrument Cost:</u> 6 days used x \$5.00, daily cost	30.00
	(f)	<u>Travel from Vancouver:</u> \$15.00 per man x 1 man	15.00
	(g)	<u>Supervision Cost:</u> 6 man days x \$1.20	7.20
	(h)	<u>Interpretation and Report Presentation:</u> Drafting - P. Vlasveld: 1 day x \$30.20 per day 1 day x \$25.70, daily wage of J. Galeski C. Smith and J. Brock 1 day x \$75.00 per day	30.20 25.70 75.00
	(i)	<u>Overhead:</u> 15% of Total = 15% x \$461.90	69.28
		TOTAL COST OF BILL MAGNETOMETER SURVEY	\$ 531.18

B. E.M. SURVEY (CRONE)

1. (a) Footage Read: 86,000 feet = 16.3 miles

(b) Operators: J. Galeski, M. Simpson and P. Dean

2. (a) Wages:

8 man days x \$16.50, daily
wage of J. Galeski \$ 132.00

4 man days x \$17.50, daily
wage of M. Simpson 70.00

4 man days x \$18.50, daily
wage of P. Dean 74.00

276.00

(b) Helicopter Support:

1.2 hours a \$112.00 per hour 134.00

(c) Fixed Wing Support:

1 trip, one way, Ross River to
Pelly Camp = 1 (76 mi. x \$.85/mi.)
= 1 x \$64.60 64.60

(d) Subsistence Cost:

16 man days x \$8.00 per man day 128.00

(e) Instrument Cost:

8 days used x \$5.00, daily cost 40.00

(f) Travel from Vancouver:

\$15.00 per man x 2 men 30.00

(g) Supervision Cost:

16 man days x \$1.20 per man day 19.20

(h) Interpretation and Report Presentation:

Drafting: 1 day x \$30.20, daily
wage of P. Vlasveld 30.20

1 day x \$25.70, daily wage
of J. Galeski 25.70

C. Smith and J. Brock
1 day x \$75.00 per day 75.00

130.90

E.M. SURVEY: Cont'd.

(i) <u>Overhead:</u> 15% of Total = 15% x \$823.10	\$ 123.46
	<hr/>
TOTAL COST OF BILL E.M. SURVEY	946.86
TOTAL COST OF BILL GEOPHYSICS	<u>\$ 3,154.21</u>

TELEPHONE 685-4331

ATLAS EXPLORATIONS LIMITED

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330 MARINE BUILDING
355 BURRARD STREET
VANCOUVER 1, B.C.

AFFIDAVIT SUPPORTING SUMMARY OF COSTS

I, John S. Brock, Operations Manager, Atlas Explorations Limited, of Vancouver, B.C., do hereby state that to the best of my knowledge and belief the statement of costs as presented in Appendix I of this Report "Geophysical Surveys on Bill-Pelly Mineral Claim Group" is both true and correct.

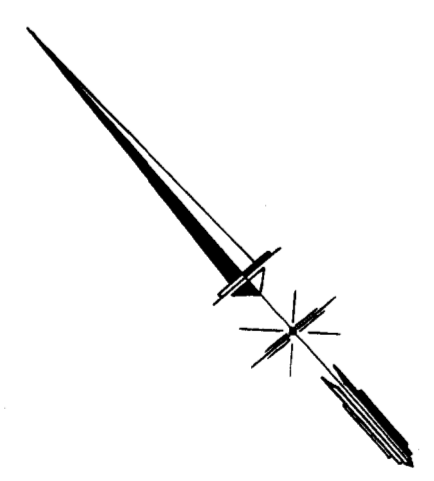
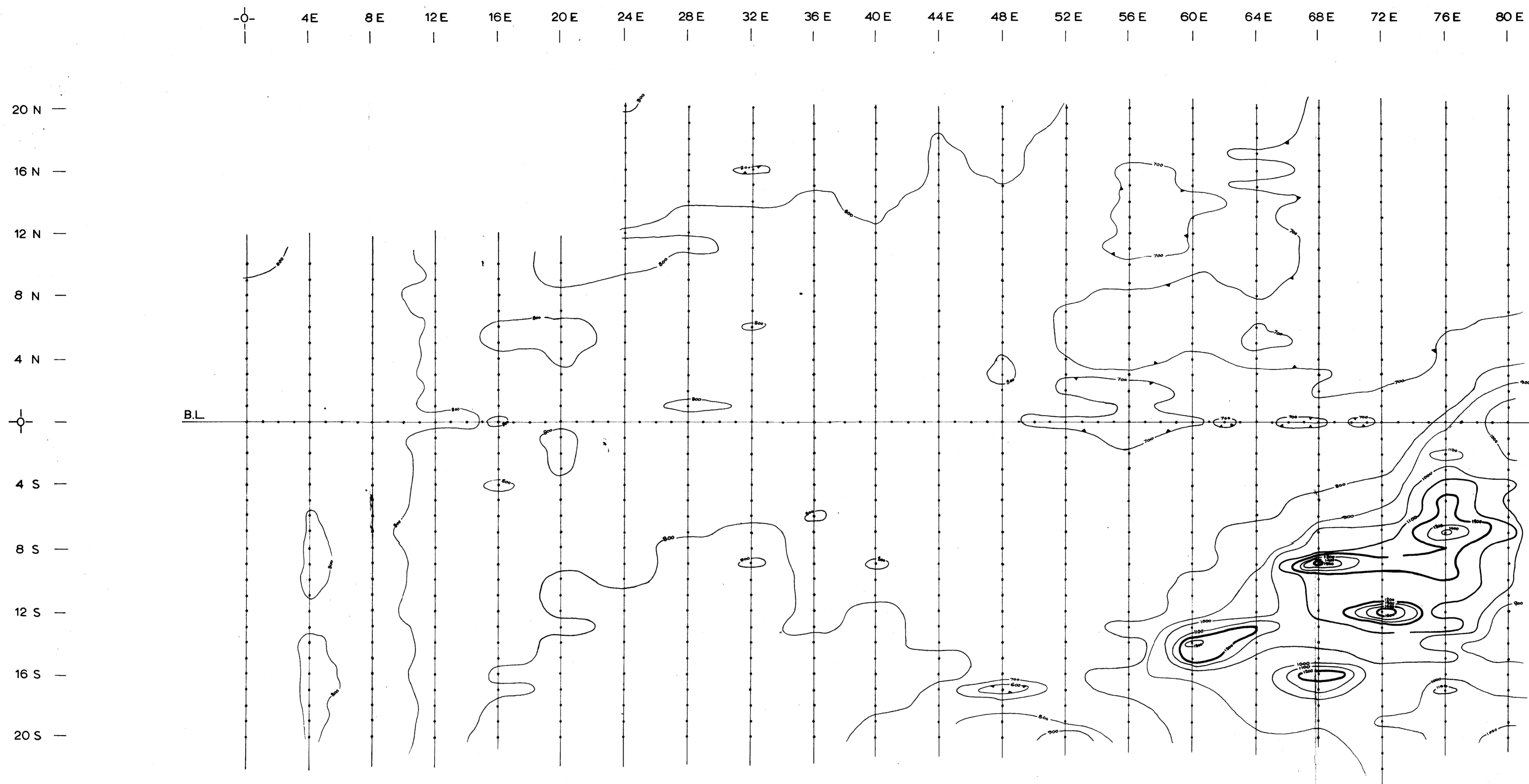
DATED, at Vancouver, B.C. this 17th day of October, 1967.

John S. Brock

A Commissioner for taking
Affidavits in the Yukon
Territory

PERSONNEL

J. Galeski,	Magnetometer Operator	1312 70th Avenue, S.W., Calgary, Alberta.
M. Simpson,	E.M. Operator	Tofino, B.C.
P. Dean,	E.M. Operator	3063 Mahon Avenue, North Vancouver, B.C.
J. Brock	Geophysicist	3029 Procter Avenue, West Vancouver, B.C.

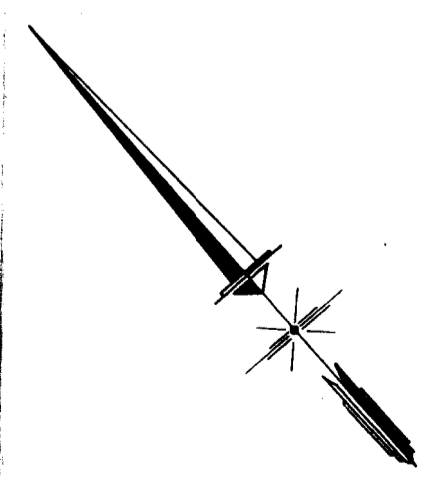
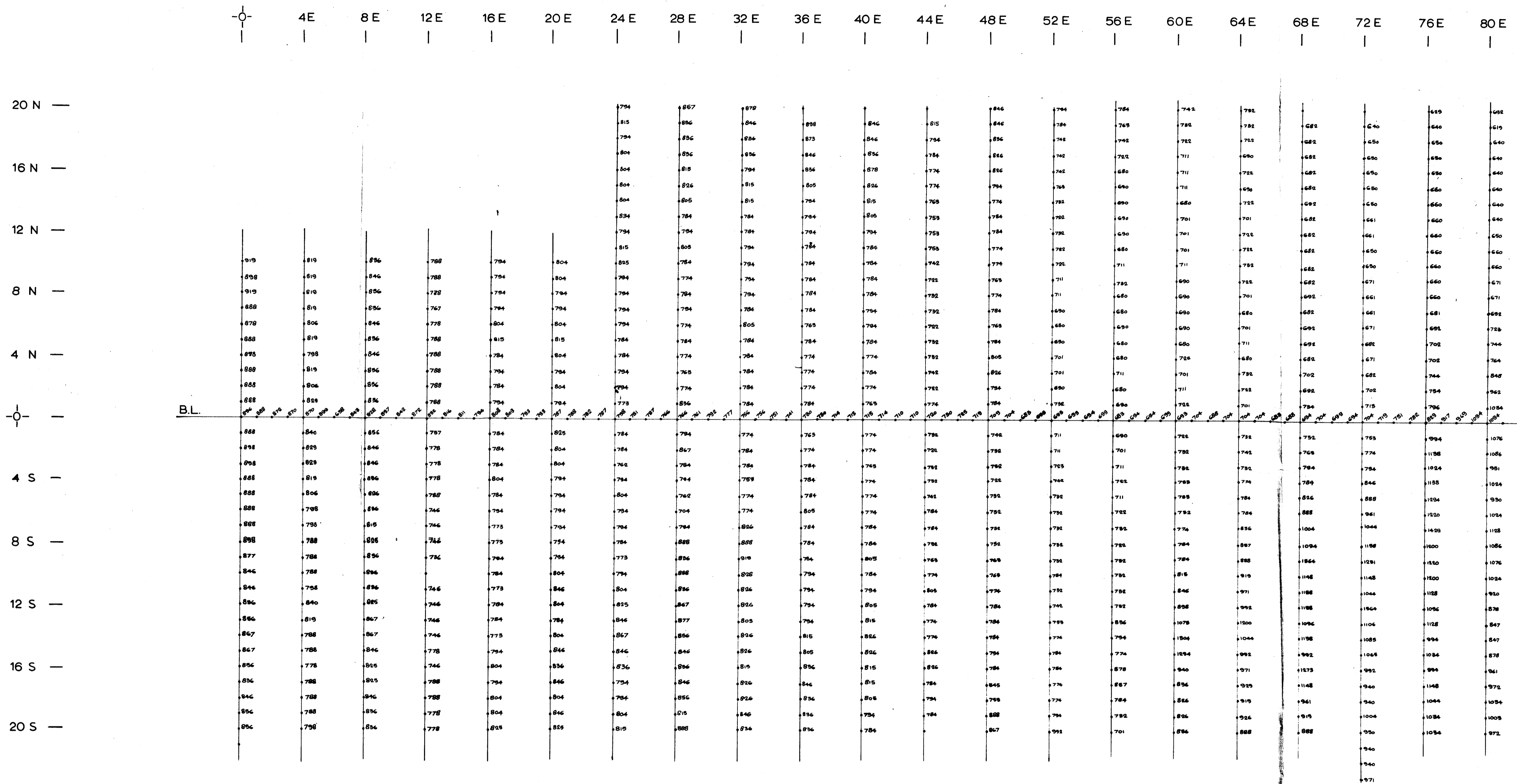


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 ROSS RIVER (Y.T.)
 SHELDON REGION
BILL MINERAL CLAIMS
GROUND MAGNETOMETER SURVEY
CONTOURS

INSTRUMENT : JALANDER
 OPERATOR : J. GALESKI

DRAWN BY : P.J.F. VLASVELD
 DATE : OCTOBER 1967

400 0 400 800
 scale in feet

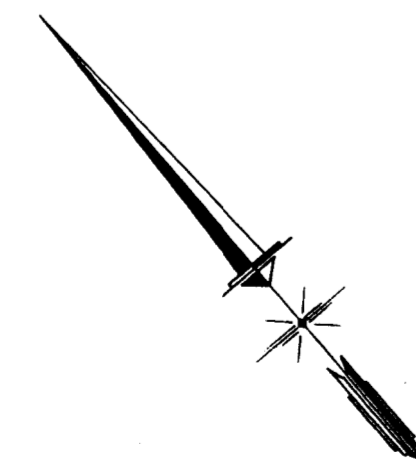
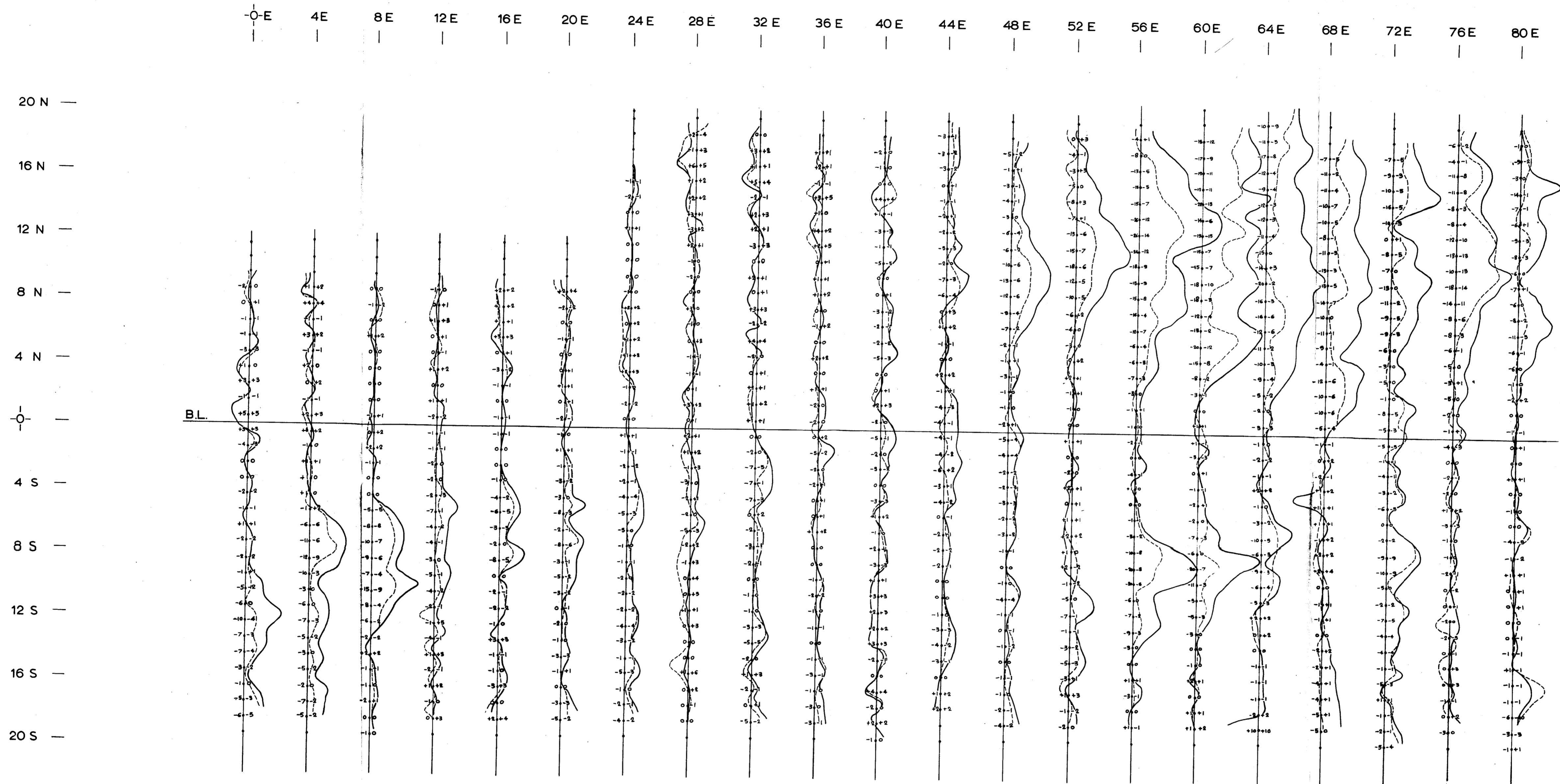


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 ROSS RIVER (Y.T.)
 SHELDON REGION
BILL MINERAL CLAIMS
GROUND MAGNETOMETER SURVEY
 - VALUES -

INSTRUMENT: JALANDER
 OPERATOR: J. GALESKI

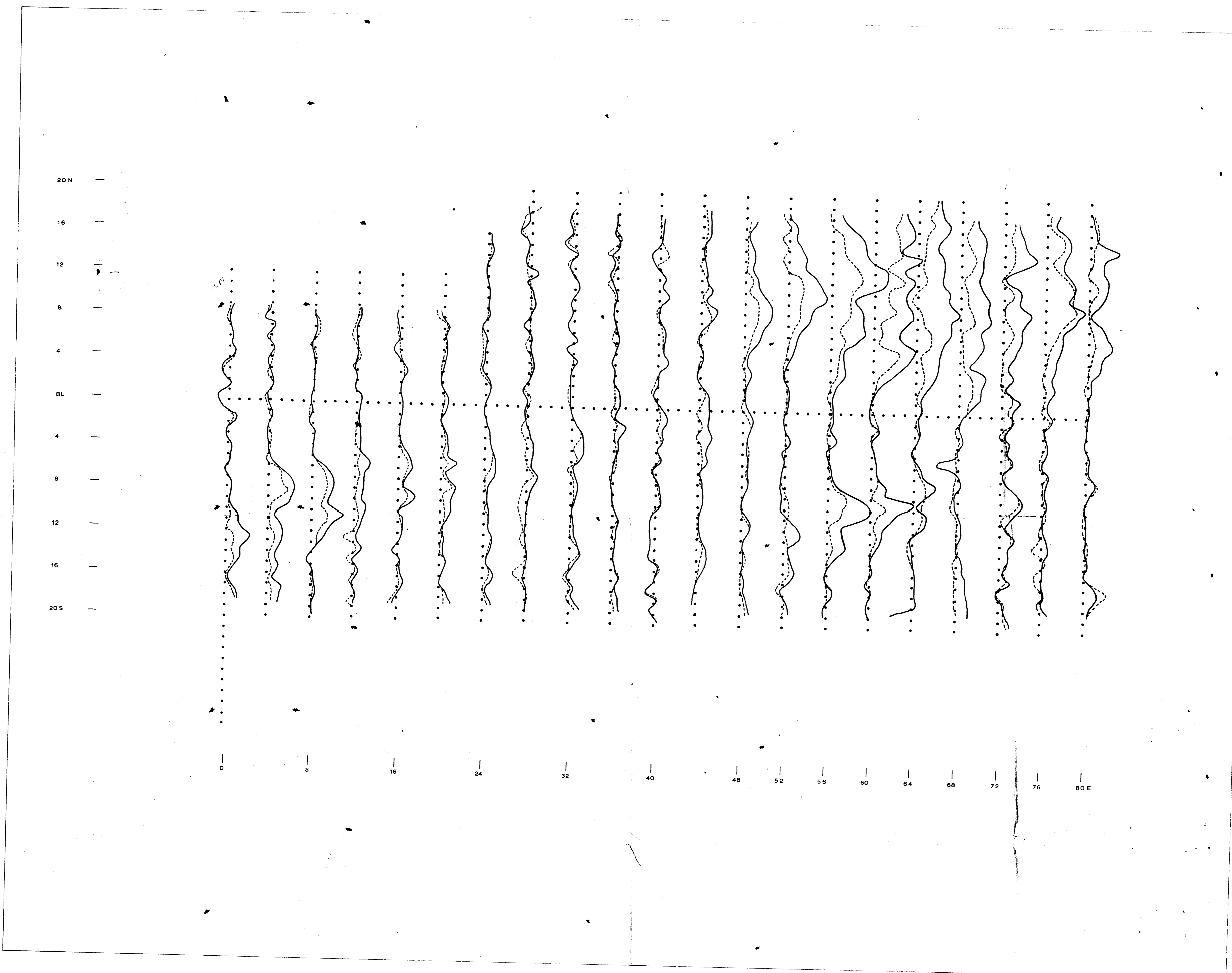
DRAWN BY: P.J.F. VLASVELD
 DATE: OCTOBER 1967

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 scale in feet



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 ROSS RIVER (Y.T.)
 SHELDON REGION
 BILL MINERAL CLAIMS
 GROUND ELECTROMAGNETIC SURVEY
 E.M. VALUES & PROFILES

INSTRUMENT: CRONE (JEM) DRAWN BY: P.J.F. VLASVELD
 OPERATOR: J. GALESKI DATE: AUGUST 1967
 0 400 800
 scale in feet



*Bill G. ...
Came @m ...*